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A DOZEN gentlemen in Cambridge and Boston have issued a circular inviting adhesion to a society for the prosecution of archæological research. The annual contribution of the members is not to exceed twenty dollars, and no subscription is to be paid in until two hundred names are secured. With an assured income of four thousand dollars, the society would be able to explore any field of moderately easy access, and in time to make valuable contributions to the museums which it might endow. Most of the signers of the call are directly or indirectly connected with Harvard College, and this with the Peabody Museum of American Archæology, and the name of the curator of this museum at the bottom of the circular suggests the idea that the new society is to be mainly a coadjutor in his work, an idea which the names of the Professor of the History of Art at Cambridge and of the Honorary Director of the Museum of Fine Arts in Boston hardly suffice to correct. We understand, however, that such an inference would be unwarranted, and that although architecture is conspicuously without a representative among the promoters of the undertaking, the society is likely to give its first efforts, at least, to architectural antiquities. In this case it will appeal strongly to the sympathies and interests of our readers. Other civilized nations are signalizing their devotion to the humaner aspects of history at the early seats of our civilization, and Nineveh, Troy, Ephesus, Cyprus, Mycenæ, and Olympia are daily yielding new laurels to their discoverers. But Delphi, the most famous of all, remains unexplored, and while other towns less famous, and accordingly less likely to have been already disturbed, still line the shores of the Mediterranean, the chances of achieving other equally notable results are most inviting. To have a hand in them, and to share the laurels that may yet be won, is a luxury which may well be coveted by all who can afford the modest subscription the society asks for.

IT is not known to every one how enormously the last ten years have added to our material for archæological study. The brilliancy of Dr. Schliemann's discoveries at Mycenæ and in the Troad have obscured the light of what would otherwise be considered investigations of surpassing interest, such as those which have been conducted at Ephesus and Jerusalem, in Rome and among the lake-dwellings of Switzerland, Italy, and Great Britain, and the discoveries in Yucatan and New Mexico on our own continent; and only the fascination of the awful mystery which surrounds the unknown world, into which we obtain a glimpse through the tomb of Agamemnon, could distract our attention from the hardly less wonderful fortune which has given us the Treasure of Hildesheim, the bronze works of Northern Italy, and, if recent reports are to be believed, has brought to light the veritable tomb of Romulus. To strictly archæological researches the society proposes to add labors in the interest of art. Perhaps the point where art and archæology are most nearly tangent is to be found in matters relating to the preservation of ancient works of art, and for this there is great need that some decided action should be taken before all past art is restored and improved out of existence. Ancient and mediæval art and architecture have perhaps no more faithful or learned devotees than can be found in America, and it may be that from the "nation of peasants," as the most imperious of modern critics calls us, will come that efficient protection for his cherished treasures which all his objurgations to his countrymen have not been able to procure.

THE Massachusetts State Board of Health has prepared and sent out two circulars, one giving directions for disinfecting clothing, bedding, etc., so as to prevent the spread of contagious diseases, and the other containing some useful warnings against the dangers which attend the use of cesspools and privies, with suggestions for disinfecting and disposing of refuse. Such documents, widely scattered and carrying the authority of the State Board, cannot fail to be of incalculable benefit. The first paragraph alone, which in a few lines speaks of the evil effect of damp and tainted cellars upon the air of a dwelling, will call the attention of thousands of householders for the first time to their own neglected basements, where the specked apples and potatoes are left to complete their putrefaction, and a pool of water stands always in the corner, while mould and cobwebs cover the ceiling. Many a dark and noisome corner will be cleansed of its corruption, the sunlight and air will find their way where they never came before, and families, to whom it had never occurred that a cellar could be otherwise than damp and foul, will feel, in increased health and spirits, the wholesome influence of this simple reform. We are glad, too, to see the radical ground which the Board takes in its treatment of the question of house drainage. It must be remembered that for sanitary reformers like Mr. Denton or Colonel Waring to advocate such a system as subsoil irrigation for disposing of house wastes is one thing, but for a State Board, accustomed to regard practical expediency as a primary consideration, to commit itself to this system, is quite another. The flush-tank and distributing pipes are as yet used so rarely and with such general distrust, that we are no less pleased than surprised to find the weighty authority of the Board given in favor of their general adoption. If the Board will supplement its recommendation by experimenting with the system it recommends in the public interest, so as to determine the conditions for putting it most cheaply and efficiently into practice, it will add much to the obligations under which it has already placed the citizens of the State which is so fortunate as to enjoy the benefit of its services.

WE fancy that many of the persons who have at the same time some knowledge of engineering and of the power of an ocean wave have watched with interest the attempt now making to build an iron pier at Long Branch, N. J., but they can hardly have expected that the work would be brought to even a temporary stand-still thus early by such blunders as are pointed out by *Engineering News*. The pier was intended to be six hundred and fifty feet long and twenty feet wide, with a floor twelve feet above mean high water. This was to be supported on wrought-iron tubular piles, which at the shore end have a diameter of six inches, while they gradually increase to twelve inches in diameter at the sea end of the pier. Each pile was to be driven fifteen feet into the sand by the aid of a water-jet, and, that the sinking might be done rapidly, a pointed casting was soldered to the foot of each pile. These piles were to support longitudinal girders of peculiar construction, — the webs being made of two four-inch and one three-inch gas-pipes strapped and riveted together — which were to be braced laterally, and this appears to be the only lateral or transverse bracing which was to be attempted. On the twelfth day of April one hundred and fifty feet of the pier had been built, the diameters of the outermost row of piles being seven inches, and the engines had been moved out to the end, when a settlement of fifteen inches declared itself, which at once put a stop to further proceedings. As the piles are twenty feet apart one way and fifteen feet apart the other way, each of these outer piles might have to support the weight of a crowd which may at any time be collected on three hundred square feet of the floor, say a live load of eight or nine tons. This weight would be sustained simply upon the unenlarged lower rim of the pile, which according to the best authorities has an area of but 0.267 of a square foot; that is, under the conditions supposed, a pressure of from thirty to thirty-seven and a half tons per square foot would be brought to bear on a foundation of shifting sand, which during severe

storms is stirred up for a considerable proportion of the depth to which the pile is sunk. The board of directors who have charge of the work is nothing if not convivial, for this untoward accident was at once celebrated by a banquet, at which the president of the company is reported to have said that he was glad the accident had occurred, as "had it happened after the pier had been finished everybody would say the project was a failure." Apparently the directors have faith in the new devices which have been adopted for supporting their pier, but we believe that securing a firm bearing for the piles is not the only serious obstacle which must be overcome.

It is somewhat exasperating to contrast with such care and thought as has been bestowed upon the design and building of our own national monument the painstaking foresight which M. Viollet-le-Duc has concentrated on the preparation of the published programme which is to govern the competition for a statue of the Republic at Paris. As the competition is not open to foreigners it is not worth while to enumerate all its conditions. The primary competition, in which the merits of models of the statue and its pedestal, executed at one-tenth full-size, are to be adjudged, closes October 6, 1879. As the statue is to be seven metres high, the scale adopted for this first competition is large enough to allow the sculptors to indicate with all necessary clearness what are their intentions. From these contestants three are to be selected by a jury of twelve men, — of whom five are to be elected by the competitors themselves, — who will be allowed six months to prepare new models — presumably mere modifications of their first designs. As the scale for this second competition is fixed at one third full size, the jury will be able to determine whether either of the three is worthy of being executed. In case the jury cannot agree on one design the contestants will receive prizes of one thousand, nine hundred, and eight hundred dollars respectively, and a new competition *ab ovo* will probably then be in order. In case one of the designs is approved, the second and third prizes only will be awarded, while five thousand dollars will be placed at the disposal of the successful sculptor, who will prepare a full-sized model of the statue preparatory to its being cast in bronze by the city. For the models of each of the accessory figures which may decorate the pedestal, he is to be allowed from eight to twelve hundred dollars, according to their sizes. The programme also recognizes the fact that the designing of a pedestal does not properly fall within the province of sculpture, and provides that the architect, who may be retained by the sculptor to design it, shall have full control of that portion of the work, and shall be paid at the same rate which is adopted for other new architectural works undertaken by the city.

After the lapse of three months *L'Art* has reviewed its treatment of Mr. Vedder which gave rise to the quarrel mentioned in our issue for February 8, but it is disappointing to find that it vouchsafes no more gracious explanation of what we pointed out was the real question at issue — whether or no *L'Art* obtained under false pretences permission to reproduce Mr. Vedder's pictures — than the statement that it does not for a moment admit that it is bound to praise a picture because the artist has consented to its publication, or that because it intends to criticise a work disparagingly it is debarred from the right of asking permission to reproduce it. To this we willingly agree, and we assent, too, to the argument that by publishing the subject of an adverse criticism an opportunity is afforded to the artist to make to the public a mute appeal from the judgment of the critic. But *L'Art* does not better its position by saying that Mr. Vedder, as the author of two paintings which were so inferior that they were not mentioned in any one of the published criticisms on the fine arts at the late exhibition, was not justified in thinking that they would receive any other than disapproving notice at its hands. This only shows how much more cruel was the disappointment of the too-believing American, who doubtless thought that at last an appreciative critic had been found. Such explanations as these will not, we fear, relieve the editors of the journal from the charge of a breach of good faith, for we cannot easily believe that they expected their invitation to be received as anything but a compliment. Of the justness of the original criticisms we hope to have before long an opportunity of judging, as we understand that an account of the quarrel, with reproductions of the offending paintings, is to be published in *Scribner's Monthly*. Intentionally or not *L'Art* has used at the end of its present discussion a tail-piece which, as the quarrel becomes more disagreeable with the lapse of time, well represents the two parties to the affair, — two archaic dogs, *sejant-combatant* as the heralds would have it, vomiting at each other large and ever-increasing missiles. The tail-piece, however, is perhaps less offensive than this peroration: "At any rate, we trust he will allow us to say that this is sheer ingratitude, for the remarks of our critic and the discussions they have occasioned have done more for the notoriety of Mr. Elihu Vedder than the Sibyl of Cumæ and the Young Marsyas."

THE OPEN FIRE-PLACE. XI.

Figs. 102, 103, and 104 represent the fire-grate recommended by the English Commission appointed for Improving the Sanitary Condition of Barracks and Hospitals. This apparatus, sometimes called the Galton Ventilating Fire-Place, though simple, combines the advantages of many of those just described, the heat-radiating ribs or flanges of Joly's fire-place, the splayed sides of Gauger and Rumford, the contracted throat, and at the same time furnishes us with an example of the use of a non-conducting, powerfully radiating material for fire-backs and immediate contact with the fuel. The grate is placed as far forward in the room as possible. The hearth is made of plate or cast-iron. The grates are of three sizes, according to the cubic contents of the room to be heated. A grate with a fire-opening of about 40 centimeters is for a room of about 150 cubic meters capacity; with an opening of 45 centimeters for 250 cubic meters; and with an opening of 55 centimeters for 350 cubic meters. Beyond this, two or more grates are required. Between the fire-clay lump and the iron back of this grate is a half-inch air space to admit a supply of heated air to the fuel, and secure a more perfect combustion of the smoke. This grate is easily cleaned or repaired, the front being secured by screws, which can be taken out when required, and thus render the interior and air chambers accessible. In this fire-place fresh air is heated only in the immediate neighborhood of the grate, but Captain Galton, in the appendix to his book on the Construction of Hospitals, recommends extending the available heating surface of the smoke-flue by carrying it through some fresh-air flue. This plan was adopted in the Herbert Hospital in the manner shown in the preceding Fig. 68, where the fire-place is in the centre of the ward, and the chimney consequently passes under the floor, as shown in section in the figure. The flue is placed in the centre of a square fresh-air flue (also shown in section), which supplies the air to be warmed by the fire-place. By this means a heating surface for the fresh air of about four square meters additional to that of the fire-place is obtained. The smoke-flue need not, of course, descend as in the Herbert Hospital. Instead of attempting to warm the fresh air before it has reached the ventilating fire-place, which involves a descending smoke flue, this air may be first passed behind the fire-place and then caused to circulate around the smoke-flue. The smoke then passes off without reversion. The manner in which it may be accomplished is shown in Fig. 105, and in this form of chimney we find the true principle of the ventilating fire-place. The radiant heat of the fire is increased by the fire-brick backing, while the heat of the smoke is utilized for a considerable distance up the flue, the fresh air being warmed in a chamber remote from the burning fuel. The fire-place stands well out from the wall. The fresh air enters behind and below the grate, and enters the room near the ceiling well warmed.

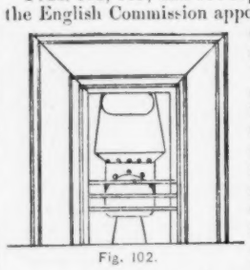


Fig. 102.

Fig. 103.

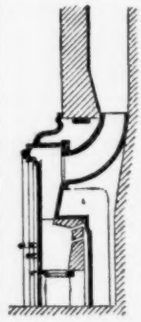


Fig. 104. From Douglas Galton.

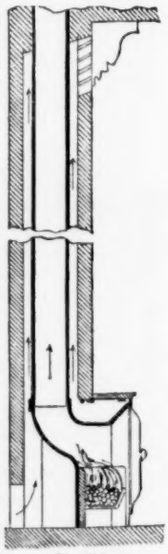


Fig. 105.

Figs. 106 and 107 show the plan of this fire-place, the first designed with a grate to burn coal, and the second with andirons, and recessed deeper, to burn wood. This apparatus is simply a modification by General Morin of that described by Peclet in 1828 (Fig. 108), in which the fresh air passes through a tube, while the smoke surrounds it as it passes up the brick smoke-flue. This system is inferior to that of General Morin, inasmuch as a greater proportion of heat is lost by absorption in the surrounding brickwork. The ascent of the smoke, moreover, is

more difficult on account of the obstructions offered not only by the roughness of the brick-work, but by the presence of the fresh-air flue, whereas in Morin's chimney the round iron pipe furnishes a smooth passage of a form the most favorable possible for the ascent of smoke.

In 1832 Captain Belmas, in the Mémorial de l'Officier du Génie, speaks of a chimney similar in principle to that of Peclet. Finally Douglas Galton applied the same principle, very slightly modifying the form, in heating the English barracks.

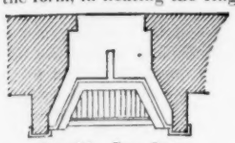


Fig. 106. From Bosc.

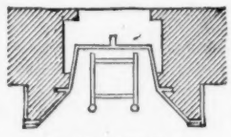


Fig. 107. From Bosc.

According to General Morin, these fire-places were designed to utilize more effectually than the common forms the heat given out by the fuel by introducing a considerable quantity of fresh air warmed to a moderate degree, to replace that which has passed up the chimney, and also to reduce the amount of cold air entering from the outside through the cracks of the doors and windows. "But while," he says, "the plans at first proposed drew in but a small quantity of fresh air, scarcely equal to one tenth of that passing out through the chimney, and raised it to temperatures of from 90° to 110° C. (about 200° to 250° F.), and often more, the forms devised by the ingenious Captain Douglas Galton for the fire-places of English barracks have furnished a very satisfactory solution of the problem, as has been proved by some experiments made with two fire-places of this kind at the Conservatory of Arts and Trades. Observations show that the amount of air admitted to the room at the ceiling through the fresh-air ducts at 26° C. (about 80° F.) differs but little from that passing off up the chimney, so that the admission of cold air through the doors is almost prevented. This introduction of warm air, in addition to the warmth produced by the ordinary radiation from the fire, increases its heating effect, which becomes as much as thirty-five per cent of the heat produced by the fuel, while the common forms of fire-place give but twelve or fourteen per cent, and those supplied with Fondet's apparatus but about twenty per cent."[1]

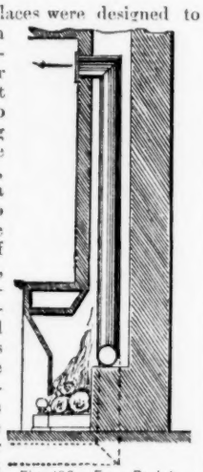


Fig. 108. From Peclet.

Nevertheless, the Galton fire-place is but little known, and seldom to be found in actual use. Bosc lays its failure to the difficulty of removing it when worn out, and to the unusual amount of space it requires in the chimney breast. "This kind of chimney flue," he says, "requires too much room, and cannot be used in our modern constructions where it becomes frequently necessary to carry up eight smoke-flues in a wall four meters long." The same objections are urged by Joly, who says "It is always necessary to provide access to these double flues for the purpose of cleaning or repair, and if they are built in the walls, the space required for the twenty-five or thirty flues of an ordinary house would be enormous. On the other hand, what an effect these double envelopes would have in our apartments if concealed behind movable cases subject to expansion and contraction under the influence of the heat! The principle is good for barracks, but why not here simply leave the flues exposed to view?" It may be further objected that the actual saving of heat by the use of such an arrangement is still too limited, although, according to General Morin, it is even greater than with the apparatus of Fondet.

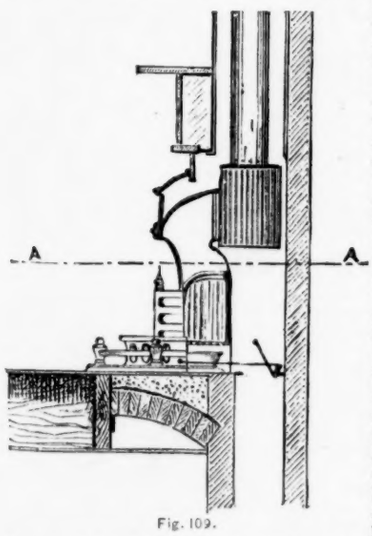


Fig. 109.

VENTILATING FIRE-PLACES MANUFACTURED IN THIS COUNTRY.

Figs. 109 and 110 represent in plan and section an excellent form of ventilating fire-place made in this country.

[1] *Annales du Conservatoire*, 6e volume, 1836.

It is similar in principle to the Joly fire-place, but is in some respects superior to the French example. The back of the grate is lined with fire-clay, by which the radiation is increased and the iron protected. Instead of the ribs or gills cast on the outer surface of the Joly grate for increasing the radiation of the iron in contact with the fresh air, we have here a jacket of corrugated sheet-iron fitting closely around the grate. This is an ingenious substitute for the fixed ribs, and has the advantage of economy and compactness, while it serves at once as a radiator and as a series of hot-air flues conducting the fresh air upwards, and retaining it in close contact with the iron back.

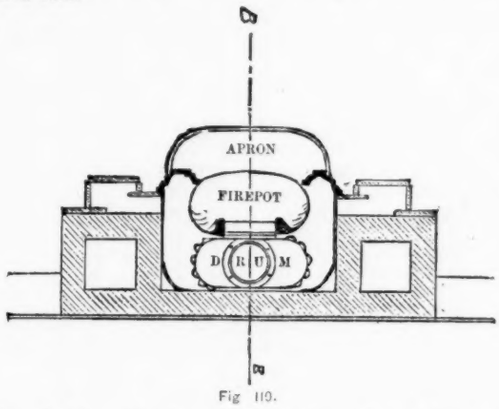


Fig. 110.

Above is a drum like that of Joly, but better located, inasmuch as it is farther from the flame, and is thrown back, so that while it allows the fresh air to impinge upon its lower surface as well as upon its sides, it throws the fire-place forward into the room where its radiation is more effective. The drum is also provided with a corrugated iron jacket. The air is admitted into the room either through a register placed in the projecting iron hood just over the grate and under the mantel-piece, and forming part of the portable fire-place, or it may pass up the fresh-air duct surrounding an iron smoke-flue, to the ceiling, where it may be admitted, as in the Galton fire-places, through a register near the cornice. It may be used therefore either with or without the double smoke-flue, and the warmed fresh air may be conducted into rooms above as well as into that containing the fire-place. Figs. 111 and 112 explain the manner in which this is done.

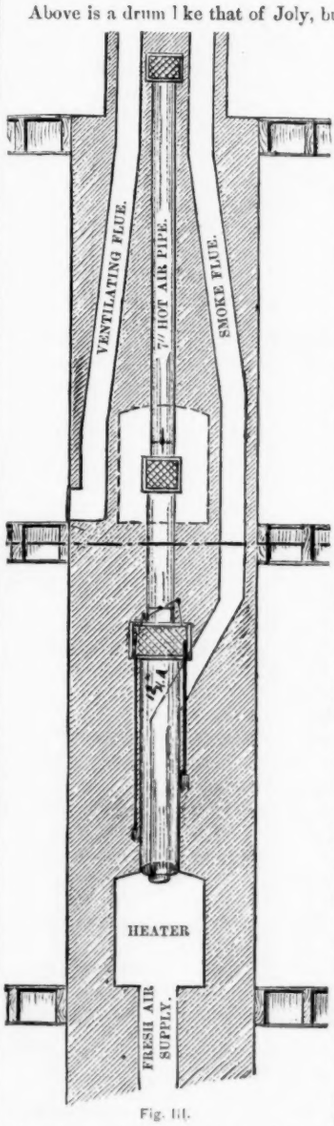


Fig. 111.

A novel and useful feature in this fire-place is the sliding blower or blowers of iron embellished with transparencies of mica slate, so constructed as to slide back into gas-tight pockets. These gas-tight pockets afford, it is claimed, additional security against the leakage of gas into the-air heating chamber. The blowers, one above in front of the grate, and one below in front of the ash-pit, may be wholly or partially opened. When shut the apparatus is converted into a small furnace. If they could be rendered air-tight a fire might be safely kept alive in the grate all night as in a close stove.

Ample space is left behind the fire-back for the introduction of earthen jars or other devices for evaporating water, or a regular furnace evaporating-dish may be used, with ball-cock and supply-pan outside. The cost of

this fire-place, which is called the "Fire-Place Heater," is advertised at from $45 to $50.[1]

Much of the success of these ventilating fire-places depends upon the intelligent setting and care in following out the directions given by the manufacturers.* The fresh-air ducts should have an area equal to that of the smoke-flue, in order that all the air passing up the chimney may be drawn from that source, and not be compelled to enter through doors and window cracks. The writer has used this fire-place in one of his office rooms during the winter, and made the following practical tests as to its heating and ventilating powers. The room is the same in which the experiments on the old fire-place represented in Figs. 1 and 2 were made, and measured 6 by 6 by 3 meters (about 20 by 20 by 10 feet).

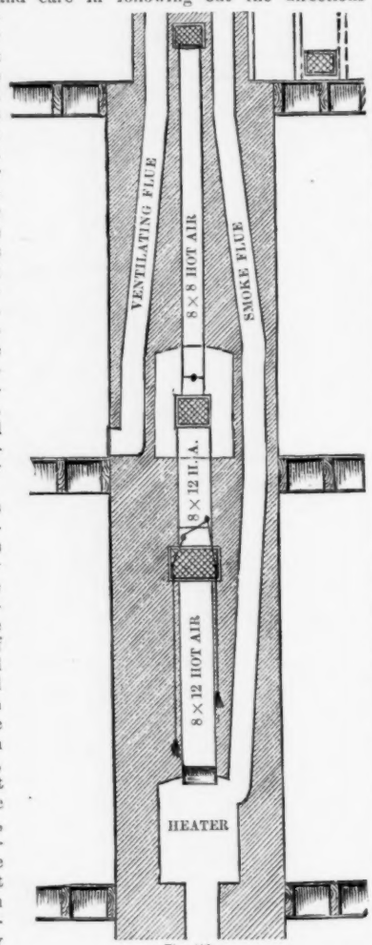


Fig. 112.

The old fire-place was removed and the ventilating fire-place put in its place. We have seen by our experiments with the ordinary fire-place originally used in the office that the combustion of three kilograms of wood served to raise the general temperature of the room but 1° C. Although the outside air stood as high as 13° C. above freezing, it was still 6° below that of the room when the experiment was begun, and as there was no furnace in the building, the air to supply the draught was obliged to come in unwarmed from the outside, and was sufficiently cold to combat successfully the heat of the fuel, of which we found only six per cent was utilized, the remainder, or ninety-four per cent, passing away up the chimney to be utterly lost.

THE ILLUSTRATIONS.

DESIGN FOR TRINITY CHURCH, ST. JOHN, N. B. MESSRS. POTTER & ROBERTSON, ARCHITECTS, NEW YORK.

This design for Trinity Church was presented in competition in the fall of 1877 and was accepted by the building committee of the parish. In the summer of 1878 the plans were discarded and a new competition instituted. It was proposed to erect the building of brown Nova Scotia-stone. The lowest reliable estimate for the church and school building complete was $83,000.

THE CATHEDRAL OF COMO, ITALY.

This design is reproduced from the *Croquis* of the Intime Club.

GARDENER'S COTTAGE. MESSRS. WALKER & GOULD, ARCHITECTS, PROVIDENCE, R. I.

This cottage was built during the last year, on a gentleman's estate at Whitinsville, Mass.

FARM HOUSE FOR MR. J. T. MORSE, BEVERLY FARMS, MASS. MESSRS. CABOT & CHANDLER, ARCHITECTS, BOSTON.

THE AWARD IN THE SECOND COMPETITION IN INTERIOR DECORATION.

The Committee of Award has decided to give the first prize to the design marked *Clay*, and the second prize to that one marked *Lynn*, while to the design marked *Persevere* is awarded an honorable mention.

In making the decision, the manner in which the demands of the programme have been complied with has first occupied the attention of the committee. Most of the competitors fail properly to recognize the condition as to the monumental and express character to be given to the piece. The design of *Clay* is conspicuous for the manner in which it has observed this prime requirement of the programme. Moreover, this design offers a better opportunity of displaying the dinner service, in that it centralizes the articles, and at the same time, by its shelves rising one above the other, allows each piece to be seen fairly, while the effect of the *ensemble* is not injured by the injudicious dispersion of the articles in separate niches or recesses. For these reasons, and in spite of the profuseness of the decoration and the errors in design which were pointed out in the last issue of this paper, the award has been made as stated. Between the merits of the designs by *Lynn* and by *Persevere* it was more difficult to determine, but it was finally decided that as the object of the sideboard was to display certain things, the second prize should be awarded to *Lynn*, whose two broad shelves offered a better opportunity for such display than the niches of *Persevere*, which would isolate the pieces one from another, while the central cupboard, though giving them a central place, rather conceals than displays them as the programme required. Moreover, the height of the lower shelf in *Lynn's* design, which has been attributed to an error in scale, may be accepted, perhaps, as adding to the monumental character of the design by removing the temptation to use the piece for the ordinary purposes of a sideboard. The committee has also been influenced by the fact that *Lynn* has made a more correct use of architectural members than *Persevere*, and has rendered them with a better knowledge of their significance, though his composition, especially as seen in perspective, is much less interesting.

[1] Manufactured by the Open Stove Ventilating Company, New York.

CORRESPONDENCE.

BUILDING MATERIALS IN THE NORTHWEST.

MINNEAPOLIS, MINN.

Not quite a year has passed since the appearance in your columns of a communication from our corner of the land, making known to the remainder the doings of the building fraternity of this State. As the past year has been an active one, and, better still, has kept us refreshed with continued signs of progress, it may not be amiss to send another letter from Minneapolis, which has during the year expended much more money in buildings than any other place in the State, and as her architects and those of St. Paul are being yearly entrusted with a larger percentage of buildings in outlying towns, a report of things as seen at home will in a degree apply to the whole State.

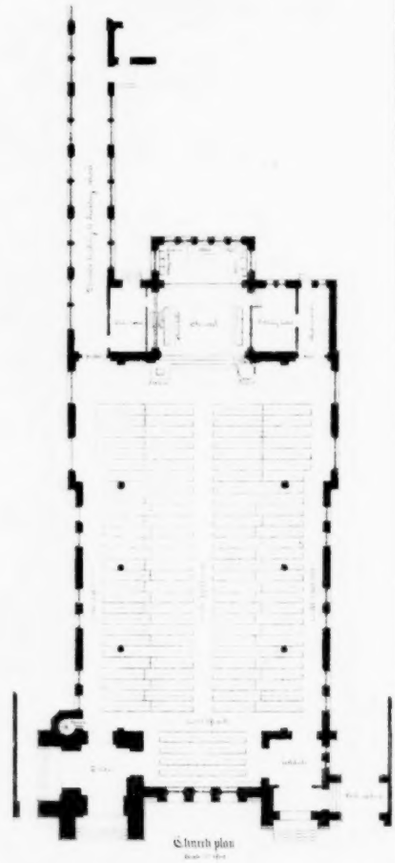
Of materials, wood has ceased to be so prominent a factor as formerly, and its use seems also to be better understood. The architects of the older and more favored parts of the country rarely encounter a power with which even the most high-handed designer here is at times obliged to compromise. This is none other than a modest catalogue. Some years ago — this history is made up of about equal parts of rumor and surmise — some clearheaded designer and business man, seeing that the "finish" for the buildings of the great Northwest was furnished by factories, very properly called "mills," conceived the beneficent project of having clearly graven on wood the contours of some hundred or two mouldings, together with sufficient balusters, newels, pew-ends, brackets, etc., from which the most fastidious might choose such as suited his peculiar taste and circumstances. Plates without number were made from these, and every mill in many new and enterprising States was supplied with as many copies of the series as it chose to order and pay for. These were neatly bound in paper, informing the public of the proprietorship, location, name, etc., of the particular factory from which they were issued. This seductive pamphlet constitutes "The Universal Moulding Book," before which we cannot choose at times but to bow, and to the different permutations and combinations of the numbers within its covers, the bulk of the work of former times owes its grace. Cheerful justice demands the truthful statement that the "Universal" would appear to the closest student of architectural history to be the most original production ever encountered, for its forms cannot be made to appear to have any kinship to any production of the Old World in any age. But as "every dog has his day," so we are made happy at times when we enter the very fortress of The Universal Moulding Book, the "mill," and see occasionally the foreman getting up a design without its aid, very likely an adaptation of some architect's design which has been sent to the factory for execution.

The greatest outlay for buildings in town during the year has been in street fronts, and in these have the greatest improvements been made. Several were actually built without galvanized-iron cornices, — an act without precedent. Galvanized-iron window caps were never largely in vogue here. Some terra-cotta manufacturers in the State introduced a few years since some very ingenious contrivances for the office; they were elaborate Renaissance (?) productions, and were fastened to the face of the masonry by iron nails and cement. They have nearly all fallen off, but with a considerate discrimination against surgeons and undertakers. So the way was open to the stone-cutter, and last year gave us some very good (and some very poor) stonework. The largest street front built was from one of the Joliet, Ill., quarries, after designs by Chicago architects. It is of the slab construction to which this stone and one division of Western genius so readily lend themselves. The galvanized-iron cornice is in form and size probably more ponderous than anything hitherto attempted, and, were it not hollow, would — not stay there. As an offset the building has some fine carving by Mr. Legg, of Chicago. St. Louis red

THE HELIOTYPE PRINTING CO. 330 DEVONSHIRE ST. BOSTON

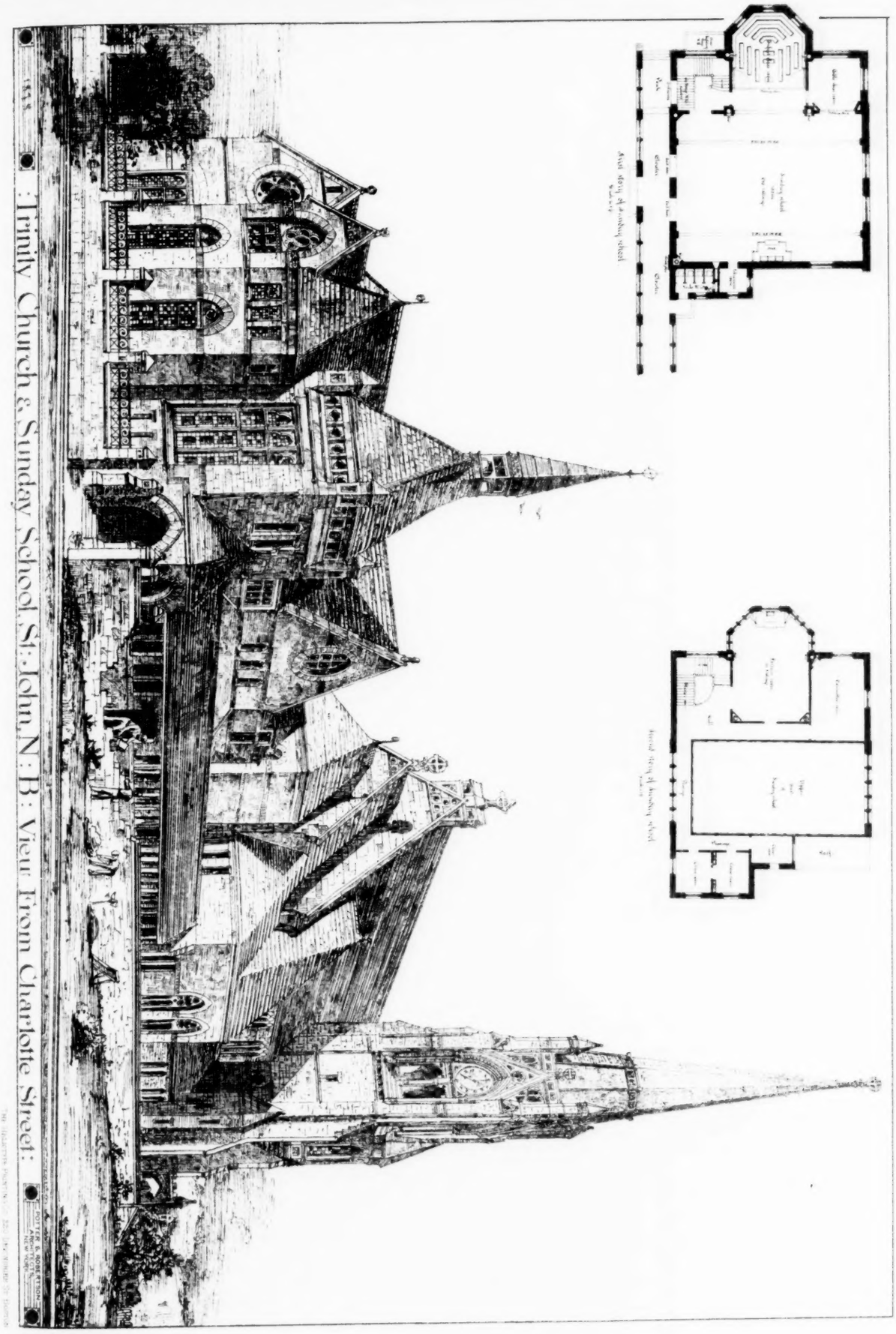
FAÇADE OF THE CATHEDRAL OF COMO, ITALY.

DESIGN FOR
Trinity Church St. Johns N.B.
POTTER & ROBERTSON,
ARCHITECTS.

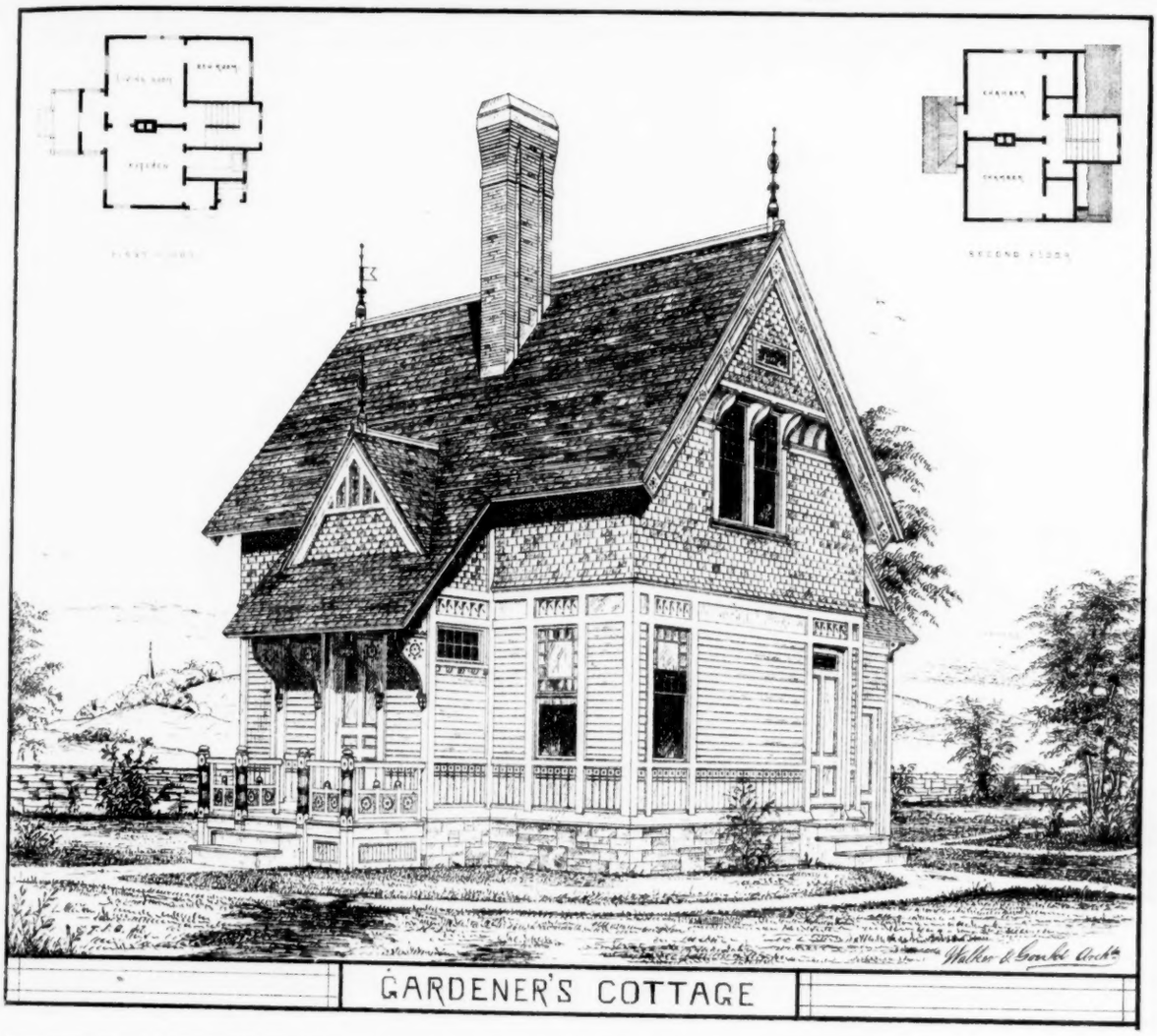


Church plan

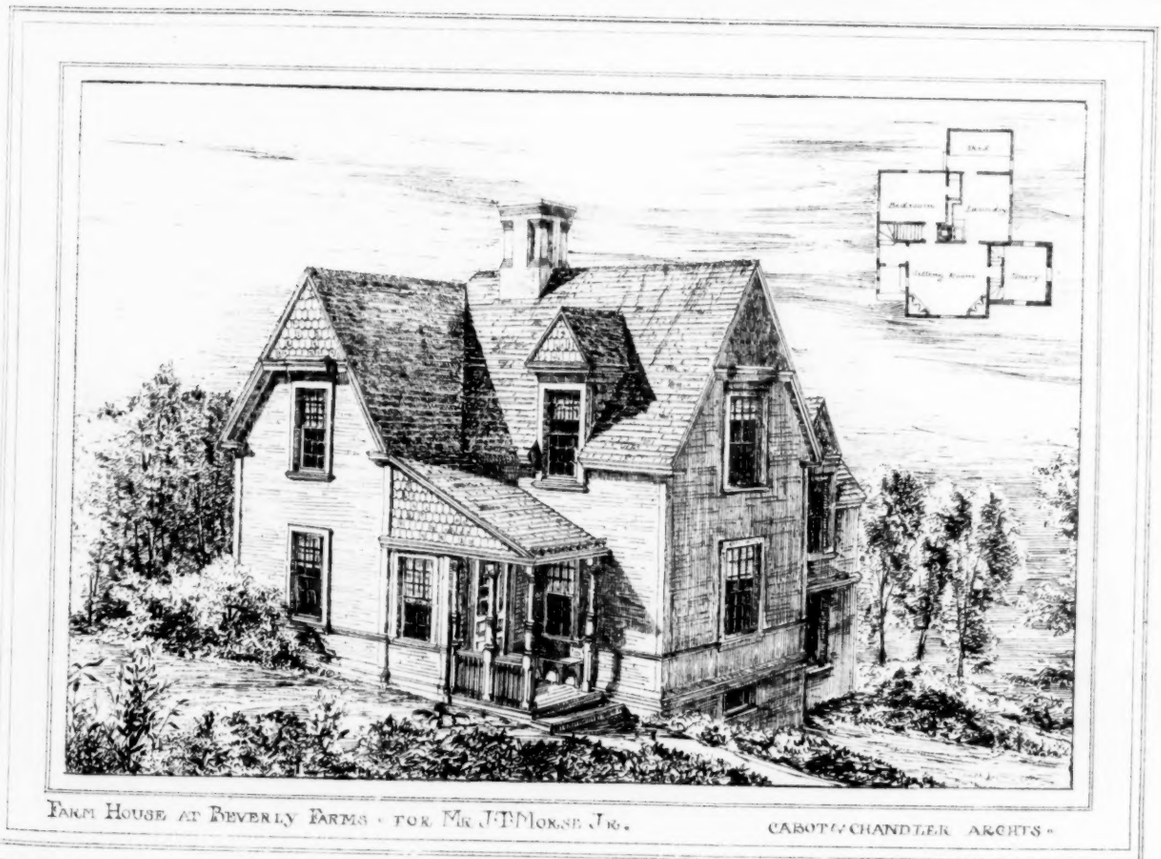
THE HELIOTYPE PRINTING CO. 220 DEVONSHIRE ST. BOSTON



Trinity Church & Sunday School, St. John, N. B. View From Charlotte Street.



GARDENER'S COTTAGE



FARM HOUSE AT BEVERLY FARMS · FOR MR. J.P. MORSE JR. · CABOT & CHANDLER ARCHTS.

THE HELIOTYPE PRINTING CO. 220 DEVONSHIRE ST. BOSTON

pressed bricks were largely used in street fronts last season and will be still more in demand this year.

An old stone quarry that was worked some thirty years ago has been reopened and bids fair to be quite an acquisition to the building materials of the State. It is in a bluff near Lake Pepin, an enlargement of the Mississippi some sixty miles below us. The stone is a beautiful warm yellow, not unlike Caen-stone in appearance, but harder and with more color. It is very easily cut, and from the appearance of the quarry is durable. Tiling has been introduced to some extent in both exteriors and interiors. One source of supply for the latter is a fashion for decorating porcelain which has obtained among a limited number of the ladies of the place.

The most important enterprise of the year, architecturally, is the new Westminster Church, from designs by the architects of the stone front mentioned above. Contracts were made for the foundation last fall and bids are now being obtained for the superstructure. The building is Gothic in style — at least it has pointed arches. One very unique feature is a belt of galvanized iron, two feet wide, perfectly plain excepting for a small bead at the bottom. It is carried around the main tower in the stone-work some fifteen or twenty feet below the springing of the wooden spire, and whether introduced to prevent the stone-work from spreading or settling, or to induce buoyancy, or for purely æsthetic reasons, has not yet been announced from official sources.

But few large dwellings were built last season, but they were a marked improvement on those built before. In style most of the new work done by home architects has had a strong Gothic tendency, yet is more or less influenced by the "vernacular," and as may be surmised the "vernacular" is suffering by the secession of its best men. Not that it has not some stand-bys; here is an example of the ever loyal: an old practitioner who gave this advice to a student, "Young fellar, the first thing you want to learn out of books is to learn to let 'em alone."

One of last season's most prominent dwellings was about as near a literal copy of a house at Dedham, Mass., by Oakey & Jones, published in an early number of the Architectural Sketch Book, as local materials would admit of.

Interior decoration and furniture are faring very well in the hands of some of our ci izens engaged in the business.

Quite a stimulus was given to the love of good things by an "art loan" exhibition during the winter, which passed all anticipation in extent and merit. HHHHHHHH.

A NEW BUILDING IN WALL STREET. — THE UNION LEAGUE CLUB-HOUSE. — THE SUIT AGAINST THE SUPERINTENDENT OF BUILDINGS.

NEW YORK.

MR. GEORGE E. HARNEY has a very good thing which he is going to offer to "the street" during the coming season, and Wall Street will have added to its fine buildings another, which will bear comparison with any of them. Last year Messrs. Thorp & Clinton put up the Jauncey Court buildings for the Orient and the Queen Insurance Companies, and no small amount of criticism was called out by the odd companionship of these two dissimilar designs. The Harney building will stand on Nos. 14, 16, and 18 Wall Street, having a frontage of 69 feet, and a depth of 122 feet. An L, 24 feet wide, runs off 27 feet to Nassau Street. Far back in the early years of the last century, the site was occupied by a Presbyterian church, the first in the city, which is now represented by the congregation which has its house of worship at 11th Street and 5th Ave. The church was rebuilt once, and since its removal two sets of business houses have occupied the precious area. Now it is to suffer, or enjoy, another transformation and become a veritable temple of Mammon for the money-changers.

The property belongs to F. W. Stevens, Esq., who has had experience of Mr. Harney's professional ability in the buildings at the corner 57th Street and 5th Ave., and the corner Broadway and Bond Street. His selection therefore for the Wall Street building was a perfectly natural one. A building fund of $200,000, in these times of cheap labor and material, seemed to justify a somewhat ambitious design. There is Queen Anne enough about it to indicate that it was done in this season of the fever of that pseudo-style, but much moderation has been exercised, and the building is a natural one and excellently composed. The material is Baltimore brick and Belleville, N. J., brown-stone. Up to the water-table the material will be a light pink granite, but not much of this will show. The general design shows a heavy stone lower story in rubbed work, with broad square headed windows. There are two entrances opening on the curb level, each being flanked with stone columns supporting a broken pediment with the Dutch curls. The entrances are not placed symmetrically with relation to the rest of the front, one opening near the centre, and the other at the extreme right or eastern corner. The first leads only to apartments on the ground and principal floors, while the other is the general entrance to the building, and by a hall gives access to the stairways and double elevator fixed at the interior angle of the L. To this point a broad well reaches, and as it is to be lined throughout with white glazed brick, abundant light is looked for at every point of the interior of the building.

The front, above the stone lower story, has a central section about 20 feet wide with coupled windows in two stories. On the sides these two stories are spanned by large arches in brick, making in effect a great opening between the outer and the central pier. These openings heighten the appearance of the outside in a marked degree, while in the stone transom marking the floor line, and in the stone mullions between the actual window frames, opportunity has been given for carving. A strongly-marked belt-course runs across the building above the arches, and then come two stories with segment-headed windows, triple on the sides and double in the central section. The cornice is of stone, and above it the dormer windows projecting from the low Mansard roof are also of stone. The central dormer has been carried up into a prominent stepped gable with coping stones, making a bold finish to the front. The windows are filled in with leaded upper lights, but they will be in plate and not in colored glass. The construction throughout is to be fire-proof, with iron beams and hollow-brick arches, and the flat roof as well. The staircases will be iron, and halls and passages will be tiled and have marble wainscoting. The height will be 73 feet to the cornice, and to the curb line of the roof 91 feet, while to the top of the antique gable the height is 100 feet. The heating will be by indirect radiation, but fireplaces will be in every room. The plan of the upper stories is a very simple one, giving each office an exposure either to the street, or to the 18 by 45 feet well mentioned. As a business building of some pretension, and occupying a position of prominence, it will be interesting to see what effect its erection will have in guiding or modifying the rage for Queen Anne work.

As yet the fantastic does not seem to have found much favor with any class of architects or designers, but here and there are rising buildings in which the architect has made so evident and strenuous an effort to be in the style of his great-grandfathers, that one would think the highest art was to be reached by reproducing what was never more than picturesque, and then only in its surroundings, and for the society and people occupying the structures. Mr. Harney may fairly be said to have gone, in the Wall Street building, as near to a picturesque treatment as Queen Anne will bear for city use.

In the Union League Club competition, the committee on selection of design, having been given full power to select without further report to the club, has asked Messrs. Peabody & Stearns to present another study of the exterior after the suggestions of members. So that really the club-house design has not yet been selected, only the architects who are to prepare it.

The charges and case against the Superintendent of Buildings is falling through. The charges against the heads of Bureaus have been withdrawn, and those against the Superintendent are dragging on without seeming point or object. W.

THE RECIPROCAL DUTIES OF ARCHITECTS AND THEIR EMPLOYERS, ESPECIALLY IN RELATION TO PUBLIC BUILDINGS.[1]

Mr. President, and Gentlemen of the New York Municipal Society:

I have been asked to prepare and read a paper "on the duty of architects as to economy and appropriateness in their designs, especially for public edifices, and as to the responsibility (in whom generally?) for the cost so generally being immeasurably beyond the estimates." In my answer, acknowledging the honor done me by the request, I said that if I complied with it, "I should have to join in the theme the reciprocal duties of owners and building committees."

Let me say, in the first place, on the point of economy, that, so far as my information goes, it is only in a very few cases of public buildings that the cost is largely beyond the estimates. It is with buildings as it is with people. The individual is lost in the crowd unless preëminent either for good or for bad. The million inhabitants of New York go about their daily business with little comment. But let one of that million, of any grade, commit a murder, or one of them, of prominent grade, be detected in any flagrant breach of a conventional law, and for nine days, more or less, the newspapers feed all the rest of that million with the scandal. Just so with the buildings of the community. The larger or smaller capitalists build their blocks of houses in the city, or their single houses in the country, and no one, except those interested as disbursers, or recipients or prospective occupants, hears anything about them. They are built sometimes with, but oftener without, the intervention of an architect. When one is employed, I think it is very seldom that the charge of going beyond the estimates, except under the owner's orders, can, after investigation, fairly be brought against him. Few people in this community build more than one or two houses for their own occupancy during a lifetime; but while this one is building it is the owner's hobby. Nothing is too good to incorporate into it. Self-importance and sentiment — all the feelings of the *pater familias*, the desire for the maximum of domestic comfort and of opportunity for the display of resources, — all are actively at work from the first line drawn on paper to the setting of the capstone; and I think it is, perhaps, more common for the architect to incur the displeasure of the owner, tacit or expressed, for attempting to control his inclination to lavishness, than for endeavoring to lead his employer into avoidable expense. When the day of reckoning comes the owner may find it a relief to his feelings to lay the blame for over-

[1] Read before the New York Municipal Society, by A. J. Bloor, F. A. I. A., on December 3, 1877, and presented November 14, 1878, to the Twelfth Convention of the American Institute of Architects, by whom it was referred to the Committee on Publications.

expenditure on another's shoulders. The payment of extra bills is not conducive to amiability or candor. And I think it is just at this stage that an owner is apt to wax eloquent over what he chooses to call the extravagance of architects. I doubt if, in one case out of ten, an owner will, after the settlement of bills is quite off his mind, have one word to say in relation to the cost being beyond the estimates, except so far as, by additions and changes, he has himself gone voluntarily beyond the original estimate.

Public buildings of course attract greater attention than private ones; and the facilities for increasing expenditure, whether lawfully or unlawfully, are also greatly in excess. Many reasons conspire to this. For one thing, there is often long delay between the tendering of estimates and the commencement of the work, and the market price of material and labor — for they generally fluctuate together — may have greatly increased in the interim. The work will then progress on an enhanced scale of prices, which is not nearly so apt to be sedulously kept before the eyes of the tax-paying community as the first low estimates were. Hence a great newspaper hubbub, when, on being called to foot the bills, the tax-payers discover the difference between their amounts and the original estimates. Again: In the case of a private building the architect has but one employer. In the case of public buildings of importance he is quite likely to have a dozen. Each man on the building committee has his own pet theory, and often his own personal interests, more or less direct, to advance; his local interests, his social interests, his family interests, perhaps his direct pecuniary interests; the last, it may be, in a perfectly lawful way from a commercial, if not from a public-spirited point of view, and perhaps not, as investigation sometimes proves. And I may be allowed to remark here that I know of no instance where legal investigation has resulted in fastening a charge of corruption on the architects of any of our public buildings. Whatever may be thought of the design or lack of design of the new County Court House in this city it has yet to be proved — and there has been much litigation and airing of facts in the matter — that in the case of that greatest scandal in the way of building operations in this or probably any other country — the architect was at all responsible for its cost being so immensely out of proportion to any fair estimate of its value as a pile of building materials. Tweed's recent testimony — whatever that may be worth — includes building contractors on that structure in its damaging statements, but not — so far as I have observed — the architect. The recent investigation into the affairs of the new Capitol at Albany casts suspicion on Commissioners and Senators and Superintendents, but not on any architect. I speak only of legal culpability, and will not exceed my limits by entering on the question of how far an architect deserves to be criticised who draws a commission on costs he cannot help knowing are immensely above fair market rates; or who, without allowing the question of fitness in selection to interfere, makes secret arrangements by which stone from a quarry, or iron from a foundry, in which he has an interest, is used; or who adds to greed a morbid egotism that blinds his eyes to the merits of any work but his own, and leads him to foist his cuckoo eggs in another's nest, at no matter what cost to artistic congruity or to the public credit, or who leads, or endeavors to lead, his employers, who may be simply the trustees of other people's contributions, a dance of disbursement, at their cost and his profit from one insufficient building for public uses to another, of equally fine promise and equally disappointing result, probably. The charges of dishonesty against the architects of the Jefferson Market Court House were not sustained after legal investigation. All that was proved was that a competent subordinate in the architect's office had permission to receive, on his own account, a moderate compensation for furnishing bills of quantities to the mechanics, — a most useful and valuable practice, which prevails in Europe in building operations, and, as many experts think, is much needed in this country.

It has been asked whether architects have not a moral responsibility on the side of the public, as apart from their own personal emoluments and professional ambition, when they have any real share (which, however, I think the manipulations of the financial and political managers of public buildings seldom leave to them) in shaping the expenditure of public money. I think they *are* morally bound to use whatever influence they can command to dissuade building committees from wasting the money collected for purposes of public beneficence from the tax-payers, on showy façades to asylums and prisons, at the expense of interior space and convenience, sanitary or other; and consequently at the expense of the health and comfort of the poor and unfortunate in their community, whose wants might be cared for with the money thus used. But if reform is really wanted in this matter, there is more need to attack the rivalry and ostentation of commissioners and building committees than their architects. The latter are in fact only the hired servants of the former, and the mass of them closely resemble men of all other professions and vocations in preferring for themselves and their dependents bread, and as much butter as they can scrape on it, to creating enmity among their employers by attempting to lecture or reform them. It does not take a man of much observation or insight, architect or other, to find out that swift and early reward in a worldly sense (no matter what success a higher course may command to those who remember the Italian proverb that "everything comes to those who know how to wait") will be, not according to his faithfulness to what is right, but according to his pliancy to egotism and greed, and the effrontery and impudence, the trickery and falsehood, which are born of them. For faithfulness is a virtue which, though he may be glad to employ it, in the person of others, for his own interests, is at heart greatly despised by the average *soi-disant* self-made man (though he is generally — yet with many admirable exceptions — not more than quarter made in reality), whose success has been mainly achieved by, it is true, the virtues of energy, enterprise, economy, and foresight, but also too often by persistent domineering selfishness and the deliberate repression of the finer instincts; and who of course carries his vices as well as his virtues into his relations with the current forces of the society he dominates. The architect of an important public building has generally enough to do without turning reformer and philanthropist, in protecting the interests of himself and those dependent on him from the rapacity or ignorance, or both combined, of those who are masters of the situation. For there is quite likely to be a ring behind himself and the honest men on the building commission, a ring which is, in popular phrase, "on the make;" and he will be very apt to lose pay for his own work and reimbursements for his employees' work already performed and in prospective, if he in any way interferes in its machinations. Indeed, like the rest of the community he may have no knowledge of them that would have any standing in a court of law, no matter what his moral certainty, or his suspicions, may be, till some internal quarrel results in public exposure.

And even if no ring for ulterior purposes exists, the various members of a building committee, though they may be ever so honest and well meaning; though they may be shining lights of the church, the forum, or the exchange; though they may be travelled men of large general culture, — even of scientific and artistic culture, — hardly ever have any available knowledge, for practical purposes, of the theory or technics of the building art. The unhappy thing, both for themselves and for the architects, is that they conceive, if they have skimmed over the three or the five "orders," — whichever number suits them the better, — and have paid their mechanics for putting up a stereotype house of their own, or have simply read the weekly quotations of the prices of brick and lumber, that they thereby become adepts on every point that exercises the powers of the architect in his complicated and difficult field. Of course the ideas of such persons as to what is due the architect are apt to be very hazy. Amateurs for the nonce are very apt to see no difference, not only in resultant value, but in cost of production, between the tokens of their own irresponsible surface work, and those of the practitioner's years of general, and weeks or months of special, study and application. After a little observation of the routine of an architect's office the more sensible of them soon learn to place a juster estimate on the value of his skill and the cost of rendering it on paper for the use of the employer and mechanic. But there are some men who seem never to get quite over a misty feeling that an architect is a sort of cross between a mason and a sketcher, and that his time and labor are not gaugeable for practical and remunerative purposes as other men's are. Yet the fact is, so far as instinct and capability go, that except in the exercise over their drawing boards of more or less of the creative faculty, — a faculty not greatly exercised by the multitude, — architects are remarkably like other men, while in their current necessities they are absolutely like them, from him who eats the best of bread and the sweetest of butter by plying his trade of king-craft, down to the *chiffonnier* who scrapes his crust out of the ash barrel. Like most well-reared people, they are much addicted to eating and drinking. As a rule architects don't smoke poor tobacco if they can get good cigars. They live in, as well as build, houses. They wear clothes, and their tailors are not called on to leave orifices for wings as well as as for limbs. Their pinions are not so well developed but they can brace them down with their ordinary sartorial appliances. Being taught that there is neither marrying nor giving in marriage in heaven, most of them — not being Newtons, or Pascals, or Turners — consider it their duty to society to get married here, and ever afterward take a vivid interest in the market rates for children's shoes and school bills.

There is really no reason why architects, as a body, should be cut off from the practical sympathies of the rest of mankind on the score of genius so exceptional as to be able to dispense with the advantages of association with safe and easy-going mediocrity. Carlyle states as an enthnological fact that Great Britain is peopled with forty millions of inhabitants, — mostly fools; and it is well known that the amiable sage of Chelsea has, at least, no better opinion of their forty millions of cis-Atlantic cousins. No doubt he classes the architects with the rest of the inhabitants, while Ruskin's latest dictum — and it may be accepted as his latest, at least, till the next number of *Fors-Clavigera* appears — about the profession is that it comprises the most sordid and stupid of mankind. Yet the average architect is as apt to see the entire length of his nose as other average men. When hard pressed by his needs or his ambition, he is as apt to know how to use suppression, detraction, or equivocation, when he does not employ something still more positive, in the case of a real or assumed rival, or of one who cannot be used as a tool, quite as well as the next average man, and he has been known to evince his adaptability for all the uses of average citizenship by allowing the wool to be well pulled over his eyes, and by following the track of the best-fed leaders in a way that would honor the agile allurements of the most unctuous bell-wether of a Tammany Convention.

MILWAUKEE HEALTH REPORTS.[1]

THIS is a very comprehensive and satisfactory report. It is not presented as an original contribution to sanitary science, but as presenting to the government and people of Milwaukee "information in regard to the means of preserving the public health." It is to a certain extent elementary, as all such documents must be if they are to be of wide, instructive influence. It is very largely a compilation, but it is a very judicious compilation, and the thread on which Dr. Wight has strung his well selected beads often helps very much to present them in their most effective light. For example, referring to the conflict between the two opposing schools, of which one maintains that diseases are transmitted by living germs, and the other that they are produced by chemical products of organic decomposition, he says, "but practically it makes no difference which theory is correct. Mankind are just as anxious to escape being poisoned by a living thing as by a dead thing. It is just as hard to see a friend die with splenic fever, the cause of which is demonstrably known, as with enteric fever, the cause of which is unknown. Fortunately the sanitarian is not obliged to wait for a solution of the great and interesting problem; he has to use the same means of preventing disease whether disease is caused by living germs or dead ferments. We had better make haste to find out whether we are drawing from our costly hydrants particles of our own excreta, which are liable at any time to be impregnated with the germs or the virus of epidemic disease. It is important to consider whether individual citizens have a right to run through the sewers into a river, thence to find its way to our drinking-water, whole cords of accumulated night-soil from the vaults of old privies, where it has become putrescent with long decay, which may contain myriad spores of disease, and which certainly is a mass of organic matter freighted with dangers to human life."

The range of subjects of general interest covers: Sewers, sewage, and sewer-gas; water supply; the health of schools; meat supply; a number of specific diseases; adulterations of food and drink, etc. The whole forms a really valuable text-book for the sanitary student.

RHYMES OF SCIENCE.[2]

ONE of the most curious instances of book-making, for it is nothing more, is the little collection of rhymes and jingling verses, a score or more in number, which has been issued lately by a publishing house in New York which, judging from its catalogue, has hitherto contented itself with publishing small manuals on various industrial and technical subjects, — but the chance of being at once humorous, poetical, and instructive has been too much of a tempation to be resisted, and this little compilation of some of the witty writings of the Rev. Richard Barham (Thomas Ingoldsby), Bret Harte, J. G. Saxe, and others, is the result. Fortunately it is so short that it can be read in twenty minutes, and so does not afflict the reader with that feeling of depression which usually follows an attempt to read many pages in any of the more pretentious collections of wit and jest. The best thing in the book is The Song of the Screw, which appeared anonymously in *Nature*. The following verse from the Three-Foot Rule, by Professor W. S. M. Rankin, — the only rhyme which at all touches the technics of building construction, — will serve to show the character of the work: —

> "Some talk of millimetres, and some of kilogrammes,
> And some of decilitres to measure beer and drams;
> But I 'm a British workman, too old to go to school —
> So by pounds I 'll eat, and by quarts I 'll drink,
> And I 'll work by my three-foot rule."

THE ROOF OF THE GRAND CENTRAL DEPOT IN NEW YORK.

NEW YORK, April 28, 1879.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Sir, — Nothwithstanding the assertion of your correspondent H., in your issue for the 19th inst., I happen to know that the late Mr. R. G. Hatfield did design the roof of the Grand Central Depot in this city, as it now stands. The design proposed by Mr. Duclos was that of the segment of an arch resting upon side walls, at a considerable elevation from the ground; and there was also one by a German engineer, which contemplated the employment of intermediate columns. These plans were submitted to my brother and were not approved by him. He recommended a complete semicircular arch, springing from the ground, and gave a sketch of it, — and this was adopted by Mr. Buckhout, the chief engineer of the Harlem road, and by Mr. William H. Vanderbilt, the vice-president. Thereupon my brother made the computations of all the strains, designated the arrangement of the ties and struts within the rib of the truss, and gave the sizes of the iron; this was immediately ordered by the Architectural Iron Works of this city, who had the contract for its erection. Mr. Duclos, who had the general supervision of construction and drawings in that establishment, had the necessary working drawings prepared to carry out the plan; and this he did in a very admirable manner, it is true, but certainly entirely in accordance with my brother's adopted design.

The span of the roof is nearly 200 feet, and the clear height at the centre is about 90 feet. The trusses are tied at bottom by a rod under the surface of the ground, inclosed in a pipe under the tracks of the railroad — a feature which the segmental arch did not admit of, but which, however, could have been dispensed with, had opportunity been afforded to construct the necessary foundations for abutments.

I do not depend upon recollection alone for the above facts; I have in my possession the documents, including a business diary, to substantiate them. Very respectfully yours, etc.,

O. P. HATFIELD, *Architect.*

BUILDING IN DENVER, COL.

DENVER, COL., April 21, 1879.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, — Your correspondent in our city must be a new-comer, for his statement of the situation is very wide of the true state of the case. Usually our earnest building operations commence in July or August, and continue from that time until mid-winter, when we slack up in a measure until mid-summer.

This year we have commenced early in consequence of the rush of immigration and the accumulation of three to four millions of dollars of money from mines worked last fall and winter — a very large part of which has centred in this city.

Last year we used thirteen million brick in this city and suburbs. This year I estimate twenty millions as the amount we shall use. We are just at this time commencing heavy buildings. There are now under contract and about ready for proposals business buildings that will surely be erected sufficient to consume six millions of my estimate.

The architectural profession is represented by five regular practitioners, — and seven or eight who connect building with their office work. Still I am not aware of much sharp competition except among the new-comers and those who contract for the work in connection with the profession. Yours truly, H.

NOTES OF EXPERIENCE AND INEXPERIENCE.

6. CENTROLINEAD. — Some one asked lately in these columns for information about centrolineads and other devices to be used in perspective drawing when the vanishing point is off the drawing board. The simplest and worst thing of the kind is a straight-edge with two rollers inserted, like those of a parallel ruler, but of unequal sizes. In using, the end with the largest wheel advances fastest, so that the whole rule sweeps around in the arc of a circle, of which the edge of the rule forms part of the radius. By shifting the rollers, putting in larger or smaller as required, the arc can be so modified that the straight edge will always point to a given centre, which coincides with the desired vanishing point. A better form of centrolinead consists of a three-armed rule, of which all the arms are movable, but can be fixed by a clamp at their intersection. Two studs being fixed at equal distances above and below the vanishing line, the long arm is made to coincide with the vanishing line, and the angle between the two short arms, one of which rests against each stud, is modified until the prolongations of the direction of the straight-edge in different positions intersect at the vanishing point required. The smaller the angle made by the two short arms, the nearer will be the vanishing point. If the short arms form two right angles with each other, or 180°, the vanishing point will be infinitely distant. If they form an angle of 0°, or coincide, the stud will be the vanishing point. With these two instruments the perspective must first be laid out at a small scale, and the edges fitted to the angles so found. A much better arrangement consists of a set of curves, cut out of sheet-brass about one twentieth of an inch thick, each being about twenty inches long, with a hole in each end for fixing to the board with thumb-tacks. Each curve is crescent shaped, the convex side having one radius, and the concave side another. The radii differ by one inch, so that with a set of ten curves the radii will run from twelve to thirty-one inches. For use with the curves, a common T-square has two pins inserted in the back of the cross piece, equidistant from the edge which the pencil works against when the T-square is on its back. One of the curves, say of thirty inches radius, being pinned near the edge of the board, by turning the T-square over, and setting it so that the pins will run along the edge of the brass curve, one edge of the blade will point always to the centre of the arc, an imaginary point thirty inches beyond the edge of the board. In use, a curve should be selected for one vanishing point, and the other, which will generally come on the board, should be calculated accurately, as it is of great importance in perspective drawing, to have the vanishing points correct to at least one eighth of an inch. By turning the T-square on its face, it serves for the vertical lines without loss of time in changing it for a different instrument. This apparatus, consisting of a T-square and ten curves, used to be sold for about ten dollars. Economical draughtsmen could get the brass curves cut for them, and acquire an equally good outfit for about five dollars. Now, according to a circular lately sent me, Mr. J. B. Shengle, of Tiffin, Ohio, sends a set for $2.50, which is cheaper than any one could get them, properly made, in small quantities, and they are well worth the money.

AN OLD DRAUGHTSMAN.

18. SLACKING LIME IN CELLAR. — No evil consequences are to be feared from the slacking of plastering lime in the cellar of a new house further than those which may be caused by the dampness from the steam swelling the finish or hard-wood floors in the rooms above. Where plastering is done in a finished house, it is worth remembering that butternut is deeply stained by the contact of lime, and, in a less degree, hard-pine, so that these woods should be carefully protected against falling mortar. C.

19. PAINT MINE. — We often see mention made in Western papers of the discovery of a valuable paint mine. Will some one have the kindness to tell me in what form the paint is found; whether, if it is used at all, it is used with or without oil, what its color or colors are, and how it is affected by dampness, sunlight, and the various atmospheric changes?

WHITE LEAD.

[1] *First Annual Report of the Commissioner of Health of Milwaukee* (O. W. WIGHT, M. D.). Twelfth Annual Report of the Department, January, 1879. Published by the city authorities

[2] *Rhymes of Science. Wise and Otherwise.* With Illustrations. New York: Industrial Publication Co. 1879.

NOTES AND CLIPPINGS.

Accident at Minneapolis. — One might think that when the walls of a building which had been destroyed by fire were thought to be so unsafe that an attempt was made to blow them up with dynamite, the attempt would not be abandoned, and the shaken walls used for a new building. Yet this was done in Minneapolis with the Galaxy Mill, one of the flour mills which was destroyed by the explosion last May. Various architects and builders declared that the walls, which were unsafe before, were perfectly safe in spite of the shaking given by the dynamite, and some twenty-five workmen were at work rebuilding the mill the other day, when one of the walls, into which they were fitting the ends of the girders, fell and killed one of the masons.

Pneumatic Dispatch in New York. — The Union Telegraph Company of New York have experimented for the last four years with a view to establishing a pneumatic dispatch service in that city, and have several short routes already in working order. The tubes, which are of brass, drawn solid so that their insides are perfectly smooth, are arranged in couples and buried in durable wooden boxes below the surface of the street. The messages or packets are placed in leathern pouches which accurately fit the tube, which has a bore of two and one quarter inches, and are driven through the tubes by compressed air, the reverse passage being effected by exhausting the air, the same engine performing both operations. The time occupied by a message in passing from the main office at the corner of Broadway and Dey Street to the Stock Exchange on Broad Street — they are about a quarter of a mile apart — is twenty-five seconds.

Carnielo's Statue of the Dying Mozart. — Mr. James Jackson Jarves writes to the New York *Times* as follows of one of the Italian statues exhibited at the Paris Exhibition, of which we lately published a somewhat favorable criticism by the noted critic, M. Louis Ménard: —

"The other example of mistaken works is the Dying Mozart of Rinaldo Carnielo, also a young Florentine of unmistakable talent and skill. No sooner was it seen in plaster by the French Minister of Public Instruction than he ordered it in marble for the Conservatory of Music at Paris. It represents the composer in his last agony, emaciated by consumption, his meagre form sinking backward in a high-backed, capacious arm-chair, with his head half buried in a large, square pillow. A voluminous ruffled shirt and heavy, long embroidered dressing-gown, completely muffle the body, but the ample folds, though somewhat sketchily and heavily executed, give perfect suggestion of the underlying shrunken anatomy. The tapering, thin hands are exquisitely modelled, and quite in character with the delicate, intellectual face, and long, thin neck. One has fallen lifeless on the just-completed music of the Requiem lying in his lap. The lips are slightly parted as the last breath is leaving the form, its warmth being still felt there when all else is cold in death. As a study of this supreme moment in a consumptive patient, Carnielo's work is faithful; for he closely watched its phenomena in the hospitals here from dying men. The expression is not painful, nor is it ecstatic, as if the spirit, recognizing its coming joy, imprinted in the still pliable form some of its own 'peace passing understanding.' The artist has just missed the spiritual element by too earnest study of the material phenomena. These, with the well-wrought accessories, so overpower it as at first glance to embarrass the spectator in rightfully apprehending the vital motive. Besides the undue prominence given to mere accessories, Carnielo's statue exhibits too much the material outlook of an expiring mortal, as an anatomical study, and does not sufficiently bring to view or suggest those more subtle distinctions which make the vast difference between Mozart and common men, irradiating his mortal frame with specific genius and filling all men's minds with undying sentiments of love and admiration. This higher law of human nature and of art the old masters recognized and strove to obey. But it is not the art-creed of men of Carnielo's stamp. Disbelieving alike in the classical theory of the beautiful and the spiritual idealism of the mediævalists, they plant their art on solid realism and uncompromising eye-fact. There is, however, strong characterization of its kind in whatever Carnielo undertakes. An intellectual head of an old man in his studio, despite its super-emphasized wrinkles and organic decay, though not æsthetic, is wonderfully artistic. But it stringently proves that the whole truth should not always be told in art any more than in society. Art is always greatest and loveliest when most creative and suggestive and least in bondage to literal, material fact, or nature in the limbo of physical science. Consistent to his view of art, Carnielo has modelled a series of sepulchral monuments in the form of sarcophagi, with figures of men or women lying on them dead, or bending over them in profoundest grief. Their tableaux-pose is admirable modelling and thoroughly life-like, but the costumes are the fashionable attire of the hour, carefully executed to the minutest details. The male mourners are dandies with canes, hats and garments of the last stylish cut, and the ladies wear Worth dresses of richest patterns, with elaborate trains; freshets of costly dry goods overflowing the ground on which they kneel, while their immaculate boots, fans, head toilets, and similar paraphernalia are so perfectly *à la mode* as to lead one to suppose their figures are really intended for sculpturesque fashion-plates, with a dash of spectacular grief in graceful attitudes for a romantic background. Certainly, nothing could be more opposite to the usual associations of bereavement and the grave-yard than these exquisitely modelled little manikins. They are artistic without being art. It is a serious misfortune that the best talent of the day should seriously put forth such work as genuine art, but it is the natural result of believing in picturesque sculpture."

The Colosseum. — A writer in the *Athenæum* says that the excavations of the Colosseum which were begun in 1874, by Signor Rosa, had no other purpose "than to avoid the profanation of a moonlight masquerade, which the Carnival committee of that year proposed to celebrate within the amphitheatre."

The Elgin Marbles. — Haydon tells us that while he was studying and drawing the Elgin marbles in the British Museum he often noticed a visitor who seemed to belong to another social class than the students who were in the habit of studying these sculptures. On inquiry he found that the person was a riding master who was in the habit of bringing his pupils to the Museum to show them what a good seat was.

Health Convention at Atlanta, Ga. — The following circular has been issued by the National Board of Health: —

Washington, April 19, 1879.

The National Board of Health will convene in special session at Atlanta, Ga., on Monday the 5th of May prox., and continue in session contemporaneously with the American Medical Association, which meets in regular session at the same place on the 6th of May. The importance of an early interchange of views and the absolute necessity for consultation with health officers, quarantine physicians, and sanitarians generally, throughout the United States, has led the National Board of Health to make known its contemplated meeting at Atlanta, and urge upon all persons interested in matters of sanitation, whether municipal, State, or National, to be present and counsel with the Board. It is earnestly hoped that not only every State, but that every municipality in the whole country will be represented, in order that a step may be taken towards securing a general system of health and quarantine regulations, and by such a gathering of the prominent sanitarians of the United States, the interests of all sections may be promoted.

By order of the Executive Committee. Thomas J. Turner,
Secretary National Board of Health.

Sculptured Bricks at Nineveh. — One of the curious things found by Mr. Hormuzd Rassam in his excavations at the site of Nineveh is a water conduit built of bricks which had evidently been used in some building above ground, for each of the bricks bore on one of its faces a portion of a human figure in high relief. Already the crossed arms, the lower part of the face, and a foot have been found. The bricks or tiles are about twenty inches square, and three and a half inches thick. It evidently took about twenty tiles to cover the full height of the figure found. The bricks are well baked, and the figure was evidently carefully modelled.

The Contents of a Roman Foundation-Wall. — In pulling down a foundation-wall near the Minerva Medica at Rome, there have been found (employed as building materials) not less than seven statues and about 1,200 fragments of other works of art. The best, and best preserved, statue represents Bacchus and a leopard, the group being five feet high. The other figures represent a faun with a basket, an emperor of the fourth or fifth century, a consul of the same period, nine feet high, a girl with the head bending on the right shoulder, which is thought to be of Greek workmanship, a draped female figure nursing her baby, etc.

A Method of Copying Drawings. — A new method of copying drawings, which is said to be useful when a couple of dozen copies or so are wanted, has been brought out, says the *Building News*, in Paris. The apparatus consists of a shallow zinc tray, in which is contained a smooth, jelly-like, cream-colored substance, resembling in some degree partially solidified flour-paste. The drawing to be copied is made with a special ink. As soon as it is dry it is turned face downwards on the contents of the tray. The back of the drawing is then rubbed over with the hand. The sheet is then lifted up, leaving much of the ink transferred to the substance in the tray. A sheet of clean paper now takes the place of the drawing, and by rubbing it over gently with the hand, an accurate copy of the original is obtained. With care, as many as one hundred copies can be had. When all that are needed have been taken, the composition in the tray is washed with a damp sponge and is then ready for use again. The nature of the composition has not been made public.

A New Telephone. — There has been recently exhibited to the French Academy a telephone with some novel features, and said to give remarkably good effects. It is the invention of Mr. Gower, an American. He uses very strong magnets, made of the best French steel known, and magnetized by means of a large electro-magnet, deriving its current from a powerful Gramme machine. The magnetic bar is bent in a semicircle, with its ends or poles projecting inward, and having each a small oblong piece of iron, on which is mounted a coil of wire. These parts are inclosed in a shallow cylindrical brass case, the cover of which carries the vibrating membrane (rather thicker than usual), separated from it by an excessively thin chamber, and attached by means of a brass ring and screws (which latter do not touch the membrane at any point) The old form of telephonic mouthpiece is abandoned, and a flexible acoustic tube, with mouthpiece, is attached to the middle of the cover. Thus, one may speak sitting at a table while the telephone is attached to the wall. Perhaps the most novel feature is the use of a telephone call, consisting of a small tube, bent at a right angle, and containing a vibrating reed; this tube is fixed on one side of the membrane. On blowing into the acoustic tube this reed is vibrated, and, consequently, also the membrane, which then moves in excursions large enough to be felt with the finger. A correspondingly strong sound is produced in the receiving telephone through vibration of its membrane, which sound may be perceived in a hall of any size, and even (from its peculiar *timbre*) when other sounds are present. The tube with the reed in it does not injure, but rather improves, the distinctness of transmitted speech. Simple phrases spoken with a loud voice into the transmitter are heard as far as five or six metres from the receiver, — a result never achieved before. — *The London Times.*

The Effect of Ozone upon Sewer-Gas. — The experiment of disinfecting sewers by means of ozone produced by the electric spark was tried in London recently. Twelve hundred cubic feet of sewer gas were inclosed in a receiver, and a torrent of nine-inch sparks from a powerful Ruhmkoff coil was passed for one hour. Then the ozone was allowed to act for twenty-four hours. At the end of that time it was found that the sewer gas was for the most part unchanged, although deodorized to a considerable extent. A second experiment was tried, by placing a quantity of decomposing sewer filth in the receiver, and again introducing the ozone. After twenty-four hours the inclosed gas was drawn off and fresh ozone introduced. It was then found that the putrification of the mass proceeded much more rapidly in ozone than in air, but that the effluvia and the mass itself were entirely destitute of those bacteria which are supposed to be the cause of zymotic disease. The experiment, therefore, was a partial success, although the great cost of this method will prevent its general introduction and practical use. — *Exchange.*